Windward Comments on the NBSA Crab-Clam QAPP

General Comments

Tierra is collecting sediment from each location in the mudflat where a clam was dug and compositing the sediment together. Volatiles will be taken from the first sediment sample collected by digging a hole to the side of the first clam dug – digging hole to 6" and immediately subsampling for volatiles. The remaining sediment from that hole and any sediment collected from subsequent holes will be composited together. The QAPP says any additional sediment subsamples will be scooped from the sediment dug out of each actual clam hole. One question is **how are they controlling for depth?** The depth of the clam will determine the depth of the hole and amount of sediment removed.

How they will keep the surface of the sediment from becoming contaminated if they are walking all over the mudflat?

They also say they will use a hand auger, shovels, or a ponar to obtain sediment samples – depending on water depth. But the SOP for sediment sampling does not discuss use of a ponar.

The general sampling design:

- 8 intertidal locations from mouth of Passaic R. down to Arthur Kill.
- 3 zones – north (4 locations), central (1 location), south (3 locations)
- Collect crab tissue samples and clam tissue samples plus sediment co-located with clams – one composite sample per intertidal location. If insufficient tissue for one sample per locations, composite across locations but not across zones.
- Dig for clams – single species composite samples
- Deploy submerged baited crab traps –minimum of 3 per location – for crabs. Check at least every 12 hours.

Other considerations:

They have a portable water quality meter in their equipment list but do not mention that they will collect water quality parameters.

CRAB TISSUE: Crabs will be analyzed as hepta-only and edible muscle samples. They will combine the two tissue types to derive WB. CPG analyzed hepatapancreas-only, muscle/hepatapancreas, muscle-only, and carcass; CPG used muscle/hepatopancreas and carcass to derive whole body concentrations. They may run into a mass issue with hepta-only samples and have to combine across areas. But that will complicate (or impede) the ability to derive whole body samples since the two datasets won't be from the same set of crabs. That's why CPG analyzed the hepta + muscle samples as well as the individual tissue types. CPG also analyzed carcasses. The NBSA areas also seem quite large for the tissue types; it is important to get adequate sample size to be representative for the area.

BSAFs: The QAPP indicates they will attempt to calculate BSAFs with co-located sediment and clam tissue data. The targeted clam species wasn't specified. They could have large sediment compositing areas that correspond to where clams are collected since their target intertidal areas designated on the figure are large. This will likely make the resulting BSAF highly uncertain.

Chemistry Comments:

1. Inorganic arsenic is not being analyzed in tissue (CPG analyzed tissue for inorganic arsenic for the HHRA).
2. They are not using high res (HRGC/HRMS) for OC pesticides or PAHs, they are using GC/ECD and GC/MS-SIM, respectively, but quantitation limits (QLs) in Worksheet 15 were similar those of HRGC/HRMS.
3. Total mercury is being analyzed by SW-846 7471B rather than EPA 1631 as was done for the LPRSA. The QL for total mercury using EPA 1631 was lower, but the quantitation limit using SW-846 7471B was below their study action level in Worksheet 15. Methyl mercury is being analyzed by EPA 1630 as was done for the LPRSA.
4. The VOC list for sediments included only four VOCs, which is a much smaller VOC list than the LPRSA VOC list.
5. The holding times for frozen tissue were often shorter than those what were used for LPRSA. This should have no effect on data quality, but just makes it logistically more difficult to analyze the samples. For sediment, they did not specify allowing for freezing the sediment to extend holding times where applicable. Again, should have no effect on data quality, but just makes it logistically more difficult to analyze the samples.
6. The analysis of certified reference materials was not specified in Worksheet 28. USEPA requested that CPG specify the analysis of certified reference for high resolution analyses (i.e., PAH, OC pesticides, PCB congeners, and PCDDs/PCDFs), total, methyl mercury, lipids, and metals. CPG was also required to specify which reference material would be used (e.g., specified in Attachment Q of the Fish/Decapod QAPP).
7. USEPA specifically requested CPG use Bligh-Dyer for lipids analysis in the QAPPs. The NBSA QAPP indicated that lipids will be conducted with the dioxin/furans analysis as part of EPA 1631B.
8. For high resolution PCB congener and PCDD/PCDF analysis, the NBSA QAPP specifies assessing precision with matrix spikes and CPG assessed precision with matrix duplicates (matrix spikes were not included in the CPG QAPP since each sample is spiked with a labeled standard). Matrix duplicates are not specified in the NBSA QAPP. The limit for precision between matrix spikes in the NBSA QAPP is < 50% RPD for PCDD/PCDF and PCB congeners; the precision limits for matrix duplicates was <20% RPD for PCDD/PCDF and PCB congeners.
9. Measurement performance criteria (Wk 12) and quality control criteria (Wk 28) are not exactly the same between the two QAPPs. The differences are likely a function of differences in laboratory-specific QA/QC criteria limits. Note: measurement performance criteria and quality control criteria (Wk 28) are specified for rinsate blanks in the NBSA QAPP; CPG did not specify criteria for rinsate blanks.

10. The study action levels in the NBSA QAPP (Wk 15) are not always the same as the DQLs CPG provided, but are generally similar. However, the rationale for study action levels is not evident. CPG included an attachment to the QAPP that provided tissue and sediment thresholds used to establish DQLs.
11. Pre-homogenization and post-homogenization minimum tissue mass requirements in the NBSA QAPP were 232 g and 207 g, respectively. CPG pre-homogenization mass and post-homogenization minimum tissue mass requirements were lower (150 g and 130 g, respectively). The mass requirements are a function of analytical methods and laboratories performing the analyses.
12. The chemical priority lists are slightly different between the QAPPs (see below). For example, metals (including mercury) and methylmercury are third and fourth, respectively on the priority list in the NBSA QAPP. Total and methyl mercury was third on CPG priority list and metals was sixth on CPG priority list. Percent moisture was prioritized before SVOC and PAH (shown as SVOC using SIM) analyses in the NBSA QAPP; PAHs and SVOCs were prioritized before percent moisture analysis in CPG QAPP. Since they are conducting lipid analysis with the PCDD/PCDF analysis that is first on their list; lipid analysis using the separate Bligh-Dyer method was sixth on CPG priority list. The priority lists are as follows:

NBSA QAPP:

1. PCDDs/PCDFs including percent lipids (50-g minimum mass)
2. PCB congeners (50-g minimum mass)
3. TAL metals including mercury and titanium (6-g minimum mass)
4. Methylmercury (1-g minimum mass)
5. Pesticides (15-g minimum mass)
6. Percent moisture (10-g minimum mass)
7. Semivolatile organics (15-g minimum mass)
8. Semivolatile organics SIM (15-g minimum mass)
9. Butyltins (30-g minimum mass)
10. PCB Aroclors (15-g minimum mass)

Fish/decapods QAPP:

1. PCDDs/PCDFs (30-g minimum mass, 10 g with reduced detection limits as described in Worksheet 15)
2. PCB congeners (10-g minimum mass)
3. Total and methylmercury (10-g minimum mass)
4. Organochlorine pesticides (10-g minimum mass)
5. Lipids (5-g minimum mass)
6. Metals (including inorganic arsenic and butyltins; 20-g minimum mass)
7. PAHs (10-g minimum mass)
8. SVOCs (including phthalates; 10-g minimum mass)
9. Percent moisture (5-g minimum mass)
10. PCB Aroclors (10-g minimum mass)
11. Alkylated PAHs (10-g minimum mass)

Validation (Wk 35 and 36) – The NBSA QAPP specifies that full validation will be conducted on all analytical parameter with the exception of grain size. For the LPRSA data, all high resolution data were submitted for full validation (i.e., USEPA Level 4), and for all other analyses only 20% of the data submitted for full validation and the remaining data was submitted for summary level validation (i.e., USEPA Level 2).